STUDIES IN NEARCTIC DESERT SAND DUNE ORTHOPTERA

PART III. A NEW SPECIES OF *CIBOLACRIS* FROM NORTHERN CHIHUAHUA, MEXICO

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In recent months two parts of my new series of studies have appeared and in this third one I propose to describe a new arenicolous acridid from the great Samalayuca Dunes of northern Chihuahua and the El Paso region.

On a trip to southwestern Texas in June, 1948, I collected briefly on the mesquite-stabilized sand hummocks about 10 miles east of El Paso (at that time) and some years later when studying this material discovered that a new *Cibolacris* Hebard was represented. Not until the third summer of my three-year summer grant with the National Science Foundation to study the Desert Sand Dune Biotae of the North American Deserts did an opportunity present itself to search for additional material of the new species.

Unfortunately, in late June of 1959, I could find no trace of the new *Cibolacris* in the mesquite hummock area east of El Paso, probably due to the drastic reduction of all Orthopteran life during the terrible six-year West Texas drought. On the night of June 25, 1959, I crossed into Chihuahua with my travelling companion, Mr. Ralph Carbone, at Juarez.

During the morning reconnaissance on the semistabilized dunes I found *Dactylotum variegatum* (not a dune acridid) and later a small colony of the new *Cibolacris*. A study of this area indicated dunes 40 to 50 feet in height about one mile south of La Noria. These dunes extended to the northwest up a valley and also about 3 to 5 miles east of the highway joined the main mass of the great Samalayuca dunes. These commence about 3 miles east of Samalayuca (5 miles north of La Noria) and as a great mountain of sand with six high peaks, estimated at 300 to 400 feet or more, continue southeasterly with their main axis parallel to the sierras, of unknown name, some miles to the east. These dunes with the La Noria arm form a "Y." The dunes have been formed by the winds that sweep down these two valleys from the northwest (a mountain lies west of the highway between La Noria and Samalayuca and divides them) or by the hot winds that sweep up the valley from the southeast. The sand is reddish and similar in color to that of the extensive El Paso sand region. The Samalayuca Dunes are the greatest in height, and perhaps in area, of all the sand dune areas to be found in the Great Chihuahuan Desert of northeastern Mexico, Trans-Pecos Texas and south-central and southeastern New Mexico.

As there were no side roads going into the main mass of the higher Samalayuca dunes, which by binoculars looked pretty barren,

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I was content to collect on those of the La Noria arm and which were traversed by the main highway going to Chihuahua City.

The dune vegetation at La Noria was not very interesting at that time of the year before the summer rains commence, if they do. Here and there were large scattered clumps of mesquite (*Prosopis juliflora Toreyana*), scattered shrubs of Silver Sagebrush (*Artemesia filifolia* and an overabundance of dead prickly Russian Thistle which made collecting difficult.

Later, in mid September, 1959, after summer rains had fortunately arrived, the reddish sand dunes were quite beautiful in their greenery of growing plants. Then, there were tall clumps of the grass *Sporobolus*, white-flowered primrose, orange-yellow flowered flax or *Linum*, clumps of yellow flowered *Psilotrophe* and *Baileya*, *Croton* sp., the blue-flowered *Gilia longiflora*, *Atriplex* sp., *Sphaeralcea* on which *Tropidolophus formosus* was feeding, and other plants as well as green mats of young Russian thistle everywhere.

Shortly after my collecting began on June 26, I was quite pleased to find a small colony of the new grasshopper. The species was quite localized and rare, inhabiting a sort of low depression in the gentle undulating dunes covered with short dead *Salsola*. Considerable search garnered a dozen males but only several females. Later, on September 21, 1 male was taken 15 miles north of La Noria where the small sand dunes first commence or about 18 miles south of El Paso, these representing the northwestern tip of the main arm of the Samalayuca Dunes.

Cibolacris samalayucae, n. sp.

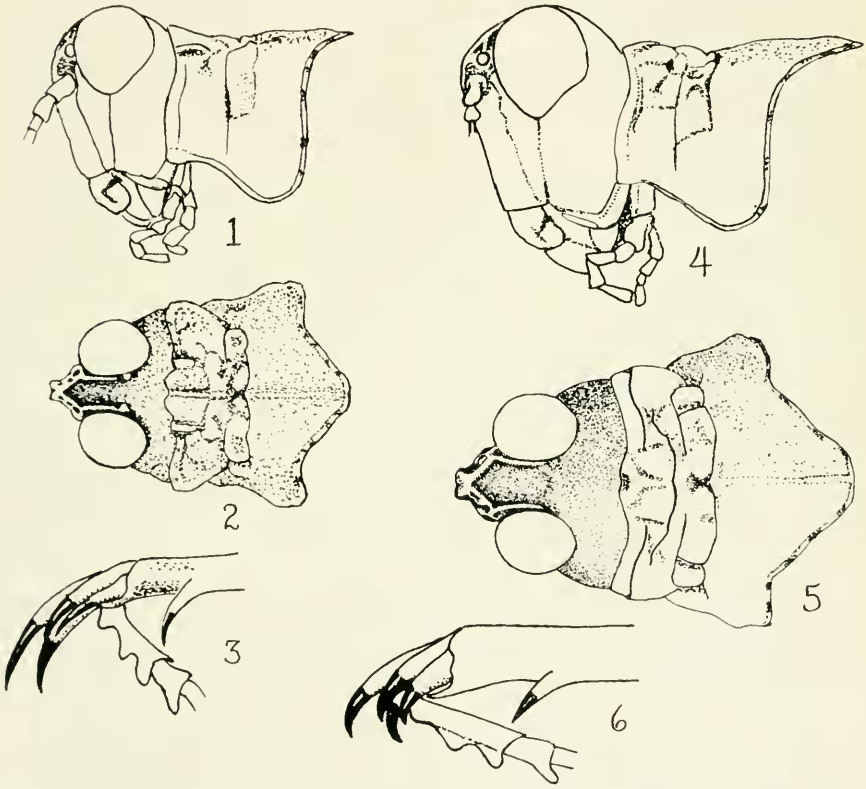
Size of the new species smaller than *Cibolacris parviceps* (F. Walker), the only known species; in size closely approximating that of *Coniana snowi* to which it bears no close relationship. The form of the fastigium, pronotum, lateral lobes of the pronotum, tegmina and spination of the caudal tibiae definitely prove the new species to be a *Cibolacris* and not an ammophilous *Heliastus* which it closely resembles in coloration.

From *C. parviceps*, the new series is amply distinct in the following features: uniform isabelline in coloration lacking the usual black patches on the posterior portion of the pronotum, the tegmina and caudal femora so typical of *parviceps*, by the more impressed lateral foveolae of the vertex and the fastigium, the greater rugosity of the pronotum, the relatively more slender teeth of the caudal tibiae and the delicate and more elongate calcariae and lesser features as well.

Male.—Head with carinae of the occiput commencing about the posterior three-quarters of the compound eyes and continuing forward, parallel, to the posterior edge of the lateral foveolae of the vertex where they suddenly converge in a straight line to a point, meeting at the upper extremity of the frontal costa. From here they diverge again to just above the median ocellus, continue parallel to

just below the median ocellus, thence diverging as they evanesce. Eyes prominent, subglobular, typical of the genus. Lateral carinae of the face, distinct, percurrent, from immediately below the lateral ocelli to the clypeal margin. Antennae, short and typical.

Pronotum typical in form, cut trasversely by the principal sulcus just cephalad of center, with another culcus arising just laterad and cephalad of the median carina, and angling forward to sharply and finely cut the lateral margin of the prozona about the posterior two-fifths, thence extending straight downwards, to terminate below the terminus of the main sulcus. The anterior half of the prozona bear definite short lateral carinae. Posterior margin of the pronotum with



EXPLANATION OF PLATE

Cibolacris samalayucae, n. sp. Male holotype: 1, Lateral view of head and pronotum; 2, view of head and pronotum; 3, Lateral view of calcariae of caudal tibiae.

Cibolacris parviceps aridus (Br.). Chinati Mts., Presidio Co., Texas. Male: 4, Lateral view of head and pronotum; 5, Dorsal view of head and pronotum; and 6, lateral view of calcariae of caudal tibiae.

All figures are greatly enlarged.

a rolled edge, slightly more than right-angled, the angle broadly rounded. Lateral lobes of the pronotum, typical, with the anterior tooth well enlarged and strongly formed, the posterior angle of the lateral lobes deep and circularly rounded, the lateral lobe as deep as broad on the metazonal portion. Tegmina typical of the genus.

Legs very slightly more slender than in *C. parviceps*. The teeth of the caudal tibiae relatively more slender and longer, and the calcariae definitely longer and more slender than in *parviceps*.

Coloration: very pale reddish gray; isabelline, with the tegmina showing numerous small darkish spots covering one to three or four cells. Wings very pale greenish yellow in the basal half without trace of any banding; the apical 2/5th with the network of veins black. There is a trace of pale smoky infuscation in the apical portion of the wing centering around the cells of M2 and M3, first and second Anals and the fourth and fifth Anals which are the areas where the cell walls are black. All legs bear traces of minute grayish specking. Caudal tibiae almost white with the faintest tinge of purplish blue.

Holotype Male.—Chihuahua, Mexico, Samalayuca Dunes at road station La Noria, 33 miles south of El Paso, Texas, June 26, 1959, Ernest R. Tinkham, collector. Glogau calliper measurements in millimeters: body length 13.9; total length to apex of tegmen 18.0; length to apex of caudal femur 15.2; pronotum 2.7 x 2.3 on metazona; depth of lateral lobe of pronotum 2.0 x 1.9 in breadth; tegmen 14.6; caudal femur 8.7; antennae 4.8 mms. Holotype deposited in the Tinkham Eremological Collection.

Female.—Larger but closely similar to the male in morphological features except as follows: carinae, edging the lateral foveolae of the vertex not as convergent to an apex as in the male, but somewhat separated at the apex before diverging to margin the frontal costa. Pronotum with the metazona definitely more rugose than in the male, otherwise closely similar to it in features. In all other characteristics the female is closely similar to the male other than in size which is larger and build more bulky.

Coloration as in the male, the dark patches on the tegmina most conspicuous at the distal end of the middle cell and at the angulation on the fore margin which in the closed tegmen is just above the base of the caudal femur.

Allotype Female.—Same data as the Holotype. Calliper measurements in millimeters: body length 23.4; length to tip of tegmen 26.2; length to apex of caudal femur 21.7; pronotum 4.3 x 3.6 in breadth; lateral lobes of the pronotum 3.5 x 2.5 in breadth; tegmen 21.4; caudal femur 12.0 mms. Allotype deposited in the Tinkham Collection.

Paratype males.—11 ♂, same locality as the Holotype and same date. 2 ♂, mesquite-sand hummocks, 10 miles east of El Paso, Texas, June 12, 1948; 1 ♂, 18 miles south of El Paso on northwest arm of Samalayuca dunes, Chihuahua, Mexico, Sept. 21, 1959; all Ernest

R. Tinkham collector. Range in millimeters: body length 4.8—14.8; length to apex of tegmen 18.0—19.9; tegmen 14.2—16.5; caudal femur 8.8—8.8; pronotum 2.8 x 2.2—2.9 x 2.3; lateral lobes 2.3 x 1.8—2.3 x 1.9 mms. Paratype males very closely similar to the Holotype Male in every respect. The type locality series is very constant in size and coloration; the two El Paso males are slightly larger and redder and account for the size range as given above.

Paratype females.— 2 ♀, same data as the Allotype. Range in measurements in millimeters: body length 22.6—23.2 (apex of abdomen somewhat decurved); length to apex of tegmen 25.2—27.0; tegmen 20.5—22.2; caudal femur 12.1—12.3; pronotum 3.9 x 3.5—4.1 x 3.5 (measured under microscope); lateral lobes 3.2 x 2.5—3.2 x 2.8 mms. Paratypes identical to the Allotype in every respect. Paratype males and two female Paratypes will be deposited in the three major Orthopterological museums (Michigan, Philadelphia, Smithsonian).

Orthopteran associates: In June these consisted of *Dactylotum variegatum* Sc. (the only North American dunes where *Dactylotum* found) and *Arethaea semialata* Rehn and Hebard. At night *Ammobaenetes phrixonemoides* (Caudell) was taken on the low dunes. In mid-September, after the summer rains, a new Orthopteran fauna had appeared such as *Tropidolophus formosus* (Say) on the mallow *Sphaeralcea*, *Trimerotropis texana* Bruner, *Melanoplus aridus*, *Aeoloplides elegans* on *Atriplex canescerns*, *Schistocerca shoshone* (Thomas), the stick insect *Diapheromera v. velii* (Walsh), *Stagmomantis limbata* (Hahn) and *S. califronica* Rehn and Hebard. At night *Ammobaenetes*, the sand treader was very rare, and at lantern light came rarely the sand roach *Arenivaga* and *Insara e. elegans* (Sc.). *Oecanthus* sp. and *Gryllus assimilis* (Fab.) were singing at night.

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